

Rapid Detection of a Winter Outbreak of Legionellosis — New York City, 2014–2015

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Summary: For rapidly escalating community outbreaks, speed of response can help save lives. New tools are speeding detection of Legionnaire's outbreaks, such as this one in a large NYC housing complex.

Abstract:

Background: *Legionella* bacteria, found in soil and water, infect humans by airborne transmission; outbreaks have been linked to cooling towers and building water systems. Environmental source investigations typically rely on culture, which can take two weeks to grow. We investigated a legionellosis outbreak in a 60,000-resident housing complex (HC) in New York City in 2014–2015.

Methods: A case was defined as legionellosis in a resident of HC, diagnosed by urine antigen test (UAT) or sputum culture during November 2014–January 2015. A structured patient interview was used to determine risk factors. Environmental samples from residential water systems and nearby cooling towers were cultured. Because of concern for an on-going hazard, we used a previously field-tested polymerase chain reaction (PCR) method to ascertain the presence of *Legionella pneumophila serogroup 1* (LP1). Clinical and environmental isolates were compared by pulsed-field gel electrophoresis (PFGE).

Results: Eight cases were identified by UAT; no patients died. LP1 was isolated from sputum. All cases resided in HC (42 apartment buildings). Two patients lived in the same building. PCR identified LP1 in samples from a large cooling tower 2 days later. No LP1 was identified in other cooling towers or at residential sites. Remediation began the following day. Results were confirmed by culture 5 days later. Clinical and environmental isolates were indistinguishable by PFGE. Repeat environmental sampling found no LP1. No further cases were identified. Changes in water disinfection contributed to *Legionella* overgrowth.

Conclusions: We linked a legionellosis outbreak to a cooling tower. Use of PCR in addition to culture allowed action to prevent further illness 5 days earlier than using culture alone. Adequate water disinfection may help prevent legionellosis outbreaks.